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AUTHOR	Heinecke, Walter; Vásquez-Levy, Dorothy; Blasi, Laura
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ABSTRACT

A new classroom is emerging as teaching styles influence the use of instructional technology across a distance. This paper discusses interactive technology from the instructors' point of view, in the context of a course design joining Iowa State University and the University of Virginia. The course was created through the combined vision and time invested by professors from instructional technology, research and evaluation, and curriculum and instruction; course content focused on instructional technology and policy. Highlights of the discussion by two instructors include course context, setting, and changing expectations. A chart presents a range of technology options and approximate costs for schools considering collaborative learning. (Author/MES)

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Diffusion of Educational Technology: Teaching and Collaborative Education

Walter Heinecke, University of Virginia, USA
Dorothy Vasquez-Levy, University of Virginia, USA
Laura Blasi, University of Virginia, USA

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A new classroom is emerging as teaching styles influence the use of instructional technology across a distance. In a panel along with Jerry Willis and Rhea Walker from Iowa State University, we will discuss interactive technology from the instructor's point of view, in the context of a course design joining Iowa State University and the University of Virginia. The course was created through the combined vision and time invested by professors from Instructional Technology , Research and Evaluation, and Curriculum and Instruction. This session is to be complemented by a session designed by graduate students who participated in the course.

Course Overview:

The content of the course focused on technology and policy. Participants in the University of Virginia's *Diffusion of Technology : Policy and Practice* explored the nature of the to educational-technology policy process in two states. A s a collaborative effort between Curry School of Education at the University of Virginia and the College of Education at Iowa State University, the research conducted on this course over the Fall semester of 1998 provides us with a window into what happens when different teaching styles have an impact on the use of IT. IT, as it is used for collaboration over a distance, is shaped by each instructor's teaching preferences at the same time it requires the classroom dynamic to depart from the lecture format.

The technology was configured to accommodate each instructor's approach to teaching in our Collaborative E-learning Laboratory (CEL). Our two-way white board and on-line conferences using NetMeetings, was augmented Collabora Newsgroup discussions. In the course of the discussions, the content determined when and how technology would be appropriate. *NPR* audio files and *Washington Post* articles available through the Web quickly become part of the course's evolving syllabus. A document camera was

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implemented when the lack of face-to-face communication was raised as an impediment to holding deliberative discussions at a distance.

Before we could look at how we were doing this, we surveyed our options to plan what we would do. This plan evolved over the semester. The following chart by Glen Bull offers a range of options for schools considering Collaborative Learning, but concerned about costs:

Designing a Collaborative Education Laboratory (Three Examples)			
	Inexpensive	Low Cost	Moderate Cost
Whiteboard	NetMeeting Software Whiteboard (free)	Graphics Tablet ($200)	Electronic Whiteboard ($2,000)
Real-time Audio	NetMeeting Internet Audio (free)	Full-duplex Conference Phone ($300)	Conference Phone with Wireless Mike ($1,000)
Projector	Scan Converter ($300)	LCD Tablet ($1,000)	Projector ($3,000)
Real-time Video		NetMeeting + Video Digitizer ($70) and Video Camera ($150)	NetMeeting + Video Digitizer ($70) and Camera & Tripod ($1,000)
Document Camera		Adapted Video Camera (no additional expense)	Video Digitizer + Video Switch ($20) + Document Camera ($1,000)
Streaming Audio		SoundBlaster ($60) + Sound Recorder Software (free) + NetShow	SoundBlaster ($60) + Sound Editing Software ($50) + NetShow
Discussion Group		Internet Discussion Group (Collabra) – (free)	Internet Discussion Group (Collabra) – (free)
Total	> $500	> $2,000	> $10,000

A second class held between Iowa and Virginia, *Philosophical Foundations of Instructional Technology*, from Iowa State University consisted of a dozen students at one site and a half-dozen students at the other. Classes of this size would have formerly been too small to be economically feasible. The rationale underlying the Collaborative Education model is not efficiency or cost savings, but creation of a richer, more diverse class than otherwise would have been possible.

The Collaborative model, which evolved from our work across a distance, challenges traditional definitions of distance education, in which one instructor might lecture via video to a passive audience or administer the entire course through Web-based fill-in-the-blank assignments. Collaboration over a distance required that teachers facilitate more often than lecture, as Newsgroup exchanges during the week outside of class meeting times became an asynchronous possibility.

Drawing from qualitative research, we intend to share our lessons-learned regarding course structure, computer-mediated communication, and the change in pedagogy that occurs when a course is constructed towards effective collaboration at-a-distance.

Instructor Perspective:
Walter Heinecke, University of Virginia, USA

Context:

As an affiliate professor in the educational technology program at the University of Virginia I teach a course on educational technology policy every two years. The course is aimed at doctoral students who want some of the policy background conditioning the implementation and use of educational technology in classrooms. When I first taught the course two years ago I was new to the profession and had no experience teaching in higher education. I did not employ any technology the first year I taught the course. I was and still consider myself to be a low to moderate technology user. I consider myself to be still working on becoming a proficient classroom teacher. I worry about such issues as the balance between lecture, discussion and student participation. I worry about remaining sensitive to the needs of my students and reaching them through various learning modalities.

Setting:

The class was small and this was due to our tentative treatment. The class had not been advertised in the class schedule or through announcements. Many students did not know when the class would be meeting and this affected the enrollment. I had no connection with the ISU enrollment process. The class dynamics were influenced by student characteristics, by the novelty of the technology, and by the nature of the computer-mediated communication. The technology seemed to change weekly. Some of this was by
my design as instructor. In other words, I would teach the class and recognize that certain limitations hindered my ability to naturally teach the course. From my perspective I was trying to make the technology seamless and invisible. During my portion of the course the classes were still fairly teacher-centered. As I mentioned I was still struggling with basic teaching issues and as I was learning the technology I was using it in fairly conventional modes.

Changing expectations:

We were able to make changes so that I could get documents and charts scanned in and used for presentations. We struggled with the intergroup communications issues. I found it difficult to be talking at the speakerphone rather than at images of the students at ISU. I think if the speakerphone were more naturally aligned with the video image that would have improved communication. We also struggled with the room arrangement. It seemed to change weekly and I couldn't get used to it as an instructional environment. In the last few weeks we had problems getting all participants on the video screen. I think group CMC got better as time went by. The conversations and discussions seemed to flow more naturally and people all had assigned tasks for readings and discussion. My colleague was definitely better at collaborative teaching than I and the technology appeared to work for her in terms of student directed presentations and discussion. I think we could have done better at student use of the technology. The course was more teacher centered than it could have been. The technology made me more conscious about how I taught. It forced me to think about using all the technological resources available to me as an instructor. It

also forced me to deal with issues of student collaboration. I was continually concerned about issues of involvement and how the technology might be affecting class participation. In summary, I feel that this technology has tremendous potential for opening modalities of instruction previously closed to traditional distance education. It is extremely useful for small seminars in which collaboration and interaction are central.

Instructor Perspective:
Dorothy Vasquez-Levy, University of Virginia, USA

Context:

In the late 1980s I was first using Bitnet and setting up listservs for students in my teacher education classes to use for discussion. I don't want the discussion to end when students leave the room. Every semester I set up a closed, on-line discussion group, and this discussion component is an integral part of the class. I use the internet as a way for students to interact with many types of information. For example, I ask students to assess Web-based subject content by considering such factors as its selection of ideas, forms of representation, and coherence and justification of content. I use many types of technology to conduct research and write, and this is the 10th year I have been studying a closed discussion group I established while in graduate school. I have used CuSee-Me technology to take my class on-line discussion groups a step further. I have students read the most recent work by educational researchers and then "meet" with these researchers in class via electronic networks. I do not see computer technology as just another tool or delivery mechanism. "I want to create interactive technology environments that will allow students and teachers to interact in ways that they couldn't otherwise."

Changing expectations:

I believe instructional/human considerations should be considered before - during - and at the conclusion of any class. The technology component should be a means of thinking about and advancing the teaching and learning of the participants -- thus accomplishing teaching and learning in ways that would otherwise not be possible.